5.5.3 Temporary Access Bridge

Purpose

The temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

Figure 42. Temporary Access Bridge

Conditions Where Practice Applies

- ✓ Streams with normal flows.
- ✓ Sites where seasonal instream work moratoriums apply.
- ✓ When performing work and the only equipment access is to cross a stream.
- ✓ Where adequate space is available to accommodate the temporary bridge and any construction across the channel.

Conditions Where Practice Does Not Apply

- ✓ Channels with little or no base flows
- ✓ Short construction time frame.

Construction

All erosion and sedimentation control devices, including stream diversions, should be implemented first. Finally, dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. The proposed construction, maintenance, and removal sequence is as follows:

Step 1 - Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.

Step 2 - Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.

Step 3 - All decking members should be placed perpendicularly to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from entering the waterway.

Step 4 -Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.

Step 5 - Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.

Step 6 - Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.

Step 7 - All areas disturbed during installation should be stabilized.

Step 8 - When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed. In all cases, the bridge materials should be

removed. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway. Any debris that falls into the stream during removal should be taken out.

Maintenance

- Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged
- Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.

Typical Problems

- Construction debris falling into stream.

5.6 GROUND STABILIZATION

After completion of construction or land disturbing activities, all disturbed areas must be stabilized to prevent future erosion. The establishment of a good vegetative cover helps protect soil from the impact of raindrops and reduces the erosive forces of runoff. Hard armor protection, such as riprap, helps protect areas that cannot be stabilized with vegetative cover.

5.6.1 Temporary Seeding and Mulching

Purpose

To prevent erosion of exposed soil material by covering with mulch and quick germinating seed mixture. Disturbed areas may need planting of woody species, in addition to seeding.

Figure 43 – Temporary Seeding

Conditions Where Practice Applies

- ✓ When work areas will not be active for more than 15 days
- ✓ Prior to anticipated precipitation events which will severely damage work performed or jurisdictional areas.

Conditions Where Practice Does Not Apply

- ✓ Permanent stabilization
- ✓ Areas permanently under water.

Construction

Reference Section 1620 – Standard Specifications for Roads and Structures, Current Edition

Maintenance

- Inspect after heavy rains and repair seed and mulch bare areas until vegetative cover is established.
- Inspect seeded areas periodically until vegetation has permanently stabilized. Repair damaged areas or failure accordingly.

Typical Problems

- Inadequate seed germination due to use of wrong seed mix for season or regional area, poor seed bed preparation, or poor fertilizer application.
- Insufficient amount of tack on mulch.
- Inadequate seed bed preparation.

5.6.2 Permanent Seeding and Mulching

Purpose

Perform as soon as possible after final grade is complete to stabilize the site and minimize erosion. Coordination with seeding crews prior to completion of the project is essential. Disturbed areas may need planting of woody species in addition to seeding.

Figure 44. Permanent Seeding and Mulching

Conditions Where Practice Applies

- ✓ On all bare soil that will not be perennially under water or covered with a permanent land cover such as riprap, stone, asphalt, or concrete.

Conditions Where Practice Does Not Apply

- ✓ Areas that are perennially under water.

Construction

- Reference Section 1660 – Standard Specifications for Roads and Structures. Current edition.
- Shall be performed within 15 working days unless otherwise specified in the permit conditions or in the contract specifications. Work day means days exclusive of Saturday and Sunday during which weather conditions or soil conditions permit land-disturbing activities to be undertaken.
- Topdressing shall be conducted in a manner that is consistent
- Do not overspray tacking material into stream during operation

Maintenance

- Inspect after heavy rains and repair seed and mulch bare areas until vegetative cover is established.
- Inspect seeded areas periodically until vegetation has permanently stabilized. Repair damaged of failure areas accordingly.

Typical Problems

- Inadequate seed germination due to use of wrong seed mix for season or regional area, poor seed bed preparation or poor fertilizer application.
- Insufficient amount of tack on mulch.
- Inadequate seed bed preparation.

5.6.3 Erosion Control Blankets

Purpose

A temporary blanket of thin biogradable materials is bound together between a plastic material. The blankets are placed over a surface that has been properly prepared and seeded. The blanket is stapled or stacked in place. An erosion control blanket serves as mulch and ultimately becomes part of the vegetation layer that protects the soil.

Figure 45. Erosion Control Blankets

Conditions Where Practice Applies

- ✓ In drainage ditches to prevent erosion and scour prior to the establishment of vegetation.
- ✓ On steep slopes where normal mulching practices will readily erode during a rainfall event. Always check manufacturer slope velocity limits for specific blankets.
- ✓ On slopes less than 2:1 to provide slope protection/ stabilization around inlets and outlets of pipes.

Conditions Where Practice Does Not Apply

- ✓ In areas that are perennially inundated with water.
- ✓ In area where slope and water velocity exceeds blanket capabilities.

Construction

Reference Section 1631 – Standard Specifications for Roads and Structures, Current edition.

Maintenance

- Reshape, repair, or replace damaged erosion control blankets.

- Secure staples that become loose.

Typical Problems

- Erosion control blankets being undermined.
- Staple numbers are not adequate to anchor blankets.
- Ends not properly anchored.

5.6.4 Riprap Slope Protection

Purpose

Used at the inlets and outlets of pipe to provide stabilization of roadway fill slope and on slopes of the channel to transition from the pipe outlet to the natural channel. Dissipates energy of flowing water, reduces velocity, and prevents scouring and erosion.

Figure 46. Riprap Slope Protection

Conditions Where Practice Applies

- ✓ When the velocities at the inlet and outlet of the pipe exceed the allowable limits of an erosion control blanket with vegetative cover.
- ✓ When field conditions exist that will prevent the establishment of a stable vegetative cover.
- ✓ Above normal high water line.
- ✓ May want to also consider the use of other natural stream design devices

Conditions Where Practice Does Not Apply

- ✓ When the anticipated velocities and natural stream require outlet protection per 5.6.5

Construction

Step 1 – Place geotextile filter fabric on the slope and temporarily anchor.

Step 2 – Place riprap on slope and dress uniformly. Do not extend riprap into bottom of stream channel. Do not use gravel, small stone with fines or asphalt for slope protection.

Maintenance

- Inspect to ensure uniform coverage and stabilization has been successful. Make repairs if necessary.

Typical Problems

- Riprap is displaced by the force of the water.
- Erosion may occur where there is inadequate structural control.
- Excessive amounts of riprap placed in jurisdictional areas.

5.6.5 Riprap Outlet Protection

Purpose

Where the natural streambed cannot withstand the anticipated outlet velocities, riprap is typically used to absorb energy and reduce velocity from the outlet flow. This prevents outlet scouring and protects the pipe from being undermined.

Figure 47. Riprap Outlet Protection

Conditions Where Practice Applies

- ✓ At pipe or culvert outlets where scour is present and is endangering the stability of the pipe or culvert.
- ✓ At new pipe or culvert outlets where the natural stream bed cannot withstand the anticipated outlet velocities and failure will endanger the stability of the pipe or culvert.
- ✓ *Areas must be permitted.*

Conditions Where Practice Does Not Apply

- ✓ When scouring of the natural stream will not endanger the stability of the pipe or culvert.
- ✓ When scouring is not present.

Construction

- Reference Standard 876.01 and 876.02 – Roadway Standard Drawings, Current Edition
- Riprap should typically be placed for a distance of 4 times the pipe diameter from the outlet.
- The area in which to install a dissipater should be undercut the thickness of the riprap such that the riprap is flush with the channel side slopes.

- Unless otherwise specified, use the following:
  - Pipes < 48”, use Class B riprap
  - Pipes > 48”, use Class I riprap

Maintenance

- Inspect and repair areas of erosion.

Typical Problems

- Erosion due to inadequate riprap coverage.
- Riprap exceeds permit allowances.

5.7 MAINTAINING NORMAL FLOW

Maintaining normal stream flow is critical to aquatic organisms. Multiple barrel culverts or pipes are designed for peak flow conditions, and during low flow conditions they may distribute normal flow over a large cross-section. Practices such as sills and rock vanes are installed to direct the stream flow through a single culvert or pipe, thereby maintaining a more natural channel condition.

5.8.1 Sills

5.8.2 Cross Vane Rock Weir

5.7.1 Sills

Purpose

Often a 6- to 12-inch high structure is placed at the upstream side of a multiple barrel culvert to divert the stream's normal flow into a single barrel. The goal is to maintain a similar depth and velocity of water in the existing channel similar to the natural stream geometry. During larger storm events, the sill is overtopped and all of the barrels are utilized. When utilizing multiple barrel culverts, the design of the sill should mimic the stream cross-section.

Figure 48. Sills

Conditions Where Practice Applies

- ✓ Streams that have a normal flow and multiple culvert barrels.

Construction

Step 1 – Divert the normal flow into the designated barrel using an approved temporary impervious dike.

Step 2 – Construct the sill such that wet concrete does not come into contact with the stream.

Step 3 – Leave the temporary impervious dike in place long enough to allow the concrete to cure.

Step 4 – Remove the temporary impervious dike.

Maintenance

- Inspect for damage.
  Remove debris and sediment.

Typical Problems

- Debris and sediment accumulation blocks flow and causes premature overtopping when culvert is not properly sized to accommodate a sill.

5.7.2 Cross Vane Rock Weir

Purpose

A 6- to 12-inch high rock structure keyed into streambank with declining surface plane in center. Device placed just downstream or upstream of culverts to maintain stream stability and streamgrade. The goal is to maintain a similar depth and velocity of water as in the existing channel. During larger storm events, the cross vane rock weir is overtopped and the other openings are utilized to convey water. The device should be sized and the dimension is a function of the stream bank full dimension.

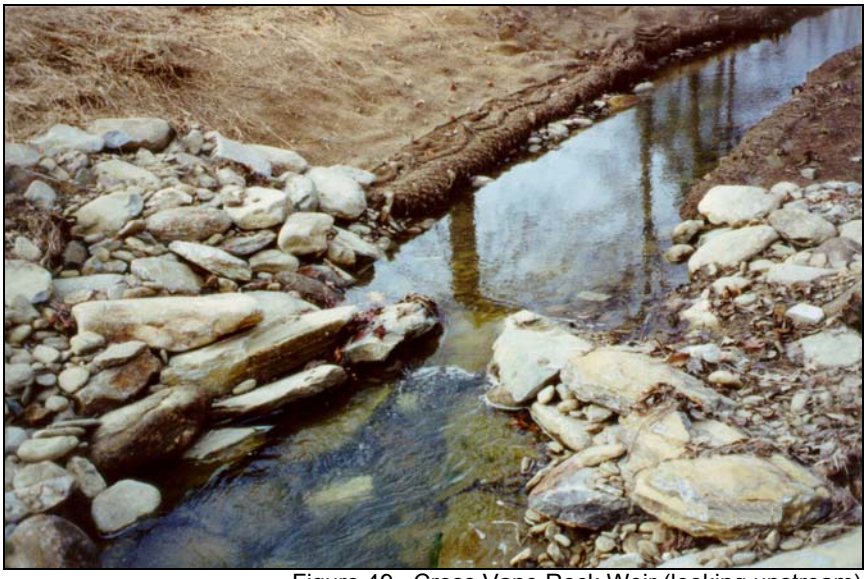


Figure 49. Cross Vane Rock Weir (looking upstream)

Conditions Where Practice Applies

- ✓ Streams that have a normal flow
- ✓ Existing multiple pipes and culvert barrels.
- ✓ Stream retrofit to improve low flow, decrease stream bank erosion, and improve AOC.

Construction

Step 1 – Divert the normal flow into the designated barrel using an approved temporary impervious dike.

Step 2 – Construct the cross vane rock weir using footer rocks. The rocks should be uniform enough to form a solid barrier to divert the normal flow and minor storm flows

Step 3 – Remove the temporary impervious dike.

Maintenance

- Inspect for damage.
- Remove debris and sediment.

Typical Problems

- Debris and sediment accumulation blocks flow and causes premature overtopping.

APPENDIX

Appendix A - ACRONYMS

Appendix B – TERMS AND DEFINITIONS

Appendix C – CONTACT LIST

Appendix D – REGULATIONS 2003

Appendix E – ENVIRONMENTAL PERMITS & CERTIFICATIONS

Appendix F – PREDICTABLE PERMIT CONDITIONS

Acronyms

AECs	Areas of Environmental Concern
AOP	Aquatic Organism Passage
BMP	Best Management Practices
CAMA	Coastal Area Management Act
CRC	Coastal Resources Commission
DCM	North Carolina Department of Environment and Natural Resources, Division of Coastal Management
DEO	Division Environmental Officer
DLR LQS	North Carolina Department of Environment and Natural Resources, Division of Land Resources, Land Quality Section
DWQ	North Carolina Department of Environment and Natural Resources, Division of Water Quality
E &SC	Erosion and Sedimentation Control
HQW	High Quality Waters
NCDOT	North Carolina Department of Transportation
ORW	Outstanding Resource Waters
RFOE	Roadside Field Operations Engineer
SHPO	State Historic Preservation Officer
SSMP	State Stormwater Management Program
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

Terms & Definitions

Areas of Environmental Concern	Designated areas within the 20 coastal counties and set rules for managing development activities within these areas.
Base Flow	The portion of streamflow that is not runoff and results from seepage of water from the ground into a channel slowly over time. The primary source of running water in a stream during dry weather.
Best Management Practices	Best Management Practices, or BMPs, are the host of tools that are applied to a project to prevent pollutants from entering jurisdictional waters and to minimize any pollutant loading. These tools include structural and non-structural measures.
Biological Assessment	Information provided by, or under the direction of the Federal agency to determine whether the proposed action is likely to adversely affect listed species or designated critical habitat.
Biological Opinion	Document that includes the opinion of the Service as to whether or not a Federal action is likely to jeopardize the continued existence of listed species, or result in destruction or adverse modification of designated critical habitat.
Candidate Species	Any species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened.
Construction Activities	All activities associated with building and operation of a new transportation structure, or modifications to an existing structure.
Critical Habitat	(1) Specific areas within the geographic area occupied by a listed species that is determined to be essential to the conservation of the species and (2) Specific area outside of the geographical area occupied by the species at the time of listing, that are determined to be essential to the conservation of the species.
Dewatering	Dewatering is the practice of removing water from the construction area. This water is considered polluted and must be treated to remove sediment before being discharged back into the channel.
Endangered	Any species, which is in danger of extinction throughout all or a significant portion of its range
Federal Species of Concern	Any species that are under consideration for listing as endangered or threatened for which there is insufficient information to support listing (further biological research and field study are needed to determine if listing is warranted). *Is likely to adversely affect: The appropriate conclusion when a proposed action may pose any effects on listed species, or designated critical habitat and the effect is not discountable, insignificant, or beneficial. When the Federal Agency preparing the Biological Assessment determines that a "is*

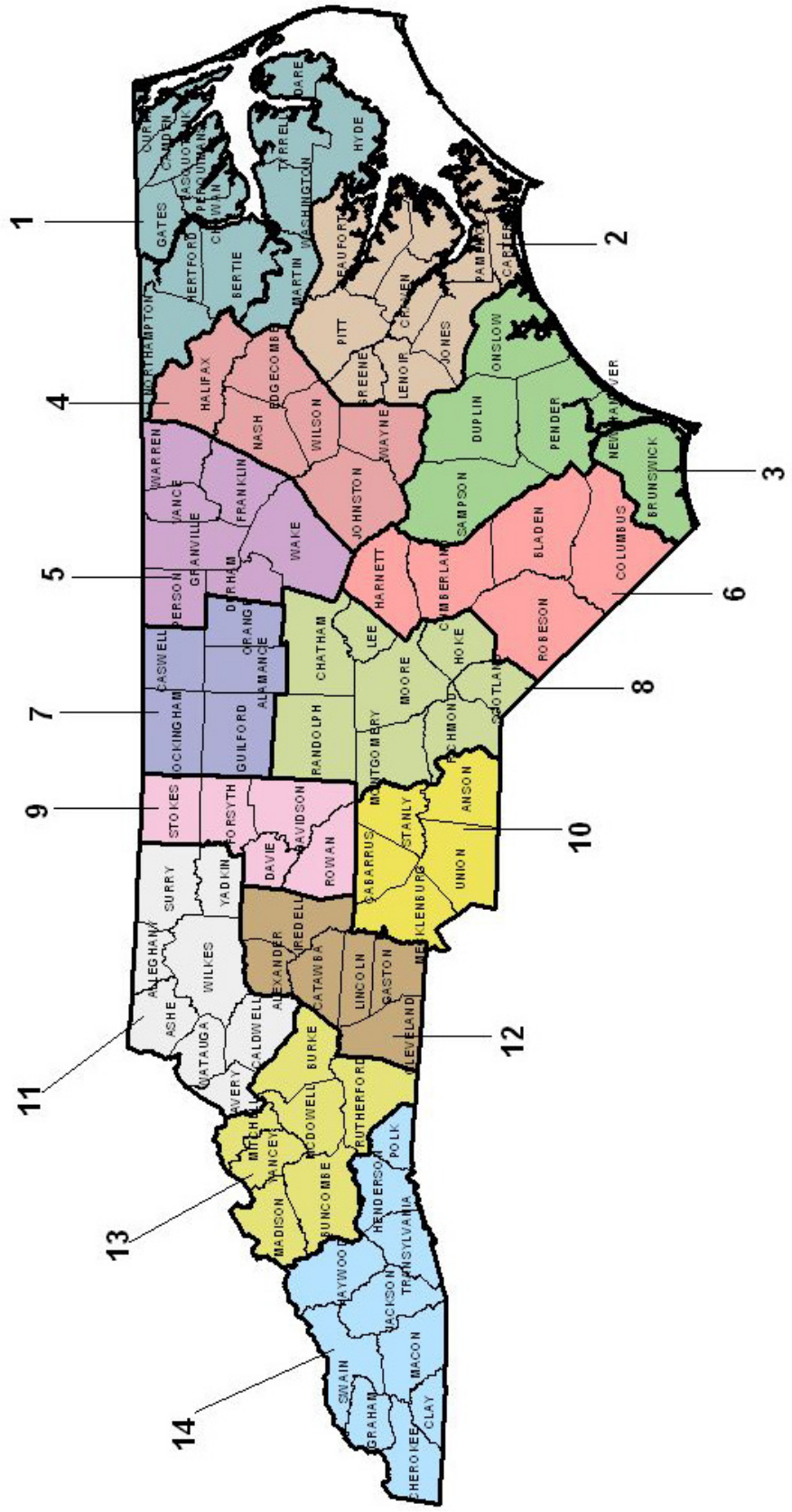
	likely to adversely affect" situation exists, then they must initiate formal consultation. *Is not likely to adversely affect: The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or beneficial. A concurrence (by the Service) with this conclusion is the termination point of an Informal Consultation.* *Jeopardize the continued existence of: To engage in an action that reasonably would be expected directly or indirectly to appreciably reduce the likelihood of both the survival and recovery of a listed species.*
Erosion Control	Erosion control consists of measures taken to prevent sediment from leaving the job site. These controls intercept, and settle sediment from runoff before it is discharged from the project. Erosion controls also help reduce velocity and reduce the erosive force of runoff.
Formal Consultation	If a proposed Federal action may affect a listed species, Formal Consultation is required. Formal consultation is a process between the Service and the Federal agency or applicant that: determines whether a proposal Federal action may affect the continued existence of listed species, or results in adverse modification of designated critical habitat. This process begins with a written request from the Federal agency to initiate consultation. A complete initiation package (Biological Assessment) is submitted with the request. If a determination is made that the action is not likely to "Jeopardize the continued existence" of a listed species, the Consultation concludes with the issuance of a Biological Opinion and incidental take statement by the Service.
Jurisdictional Areas	Waters of the United States including streams, lakes, estuaries, and wetlands that are regulated by the federal and state government.
Maintenance Activities	All activities associated with the repair or replacement and operation of an existing transportation structure which reflect current design specifications and safety standards but do not result in a change from an existing use.
May Affect	The appropriate conclusion when a proposed action may pose any effects on listed species, or designated critical habitat. When the Federal agency preparing the Biological Assessment determines that a "may affect" situation exists, then they must initiate formal consultation.
Natural Channel	The channel area that conveys the intermittent or year round water from the respective drainage area.
Peak Flow	The highest rate of flow during a specified rainfall event.
Riparian Buffers	Legally protected areas along jurisdictional waters such as streams, lakes, ponds, and estuaries in certain basins.
Rip Rap	Rock of varying size place to reduce or eliminate erosion

	caused by falling rain or running water.
Service(s)	The U.S. Fish and Wildlife (FWS) or National Marine Fisheries Service (NMFS), or both
Take	To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.
Threatened	Any species, which is likely to become an endangered species within the foreseeable future.
Watercourse	Flow path through the normal channel and/or diversion that occurs during minor rainfall events.
Work Area	The area necessary to perform the construction or operation activity within or adjacent to jurisdictional areas. They include but are not limited to, excavation and storage of material, construction, and the maneuvering of equipment and manpower.

NCDOT CONTACTS

Contact Division for Resident Engineer, Environmental Officer, Field Operations Engineer.

DIVISION MAP

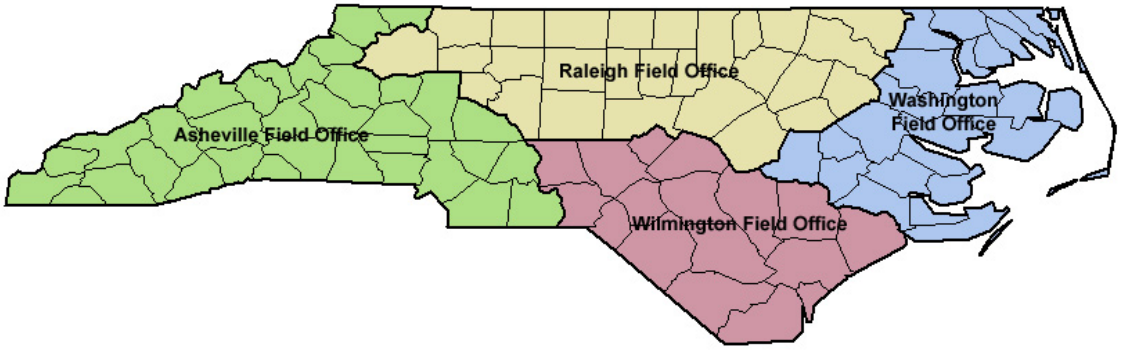


NCDOT CONTACTS

Contact Division for Resident Engineer, Environmental Officer, Field Operations Engineer.

ORGANIZATION	MAILING ADDRESS	PHONE	FAX
NCDOT Division of Highways	1536 Mail Service Center Raleigh, NC 27699-1536	(919) 733-7384	(919) 733-9428
NCDOT Headquarters Secretary of Transportation	1501 MAIL SERVICE CENTER RALEIGH NC 27699-1501	(919) 733-2520	(919) 733-9150
NCDOT Highway Division 01	113 Airport Drive, Suite 100 Edenton, NC 27932	(252) 482-7977	(252) 482-8722
NCDOT Highway Division 02	105 Pactolus Hwy. (NC 33) PO Box 1587 Greenville, NC 27835	(252) 830-3490	(252) 830-3352
NCDOT Highway Division 03	124 Division Drive Wilmington, NC 28401	(910) 251-5724	(910) 251-5727
NCDOT Highway Division 04	PO Box 3165 Wilson, NC 27895	(252) 237-6164	(252) 234-6174
NCDOT Highway Division 05	2612 N. Duke Street Durham, NC 27704	(919) 560-6851	(919) 560-3371
NCDOT Highway Division 06	PO Box 1150 Fayetteville, NC 28302	(910) 486-1493	(910) 486-1959
NCDOT Highway Division 07	PO Box 14996 1584 Yanceyville Street Greensboro, NC 27415-4996	(336) 334-3192	(336) 334-3637
NCDOT Highway Division 08	902 N Sandhills Blvd, PO Box 1067 Aberdeen, NC 28315	(910) 944-2344	(910) 944-5623
NCDOT Highway Division 09	2125 Cloverdale Avenue Winston Salem, NC 27103	(336) 631-1340	(336) 761-2347
NCDOT Highway Division 10	716 W Main St. Albemarle, NC 28001	(704) 982-0101	(704) 982-3146
NCDOT Highway Division 11	P O Box 250 North Wilkesboro, NC 28659	(336) 667-9111	(336) 667-4549
NCDOT Highway Division 12	P O Box 47 Shelby, NC 28151-0047	(704) 480-9020	(704) 480-5401
NCDOT Highway Division 13	PO Box 3279 Asheville, NC 28802	(828) 251-6171	(828) 251-6394
NCDOT Highway Division 14	253 Webster Road Sylva, NC 28779	(828) 586-2141	(828) 586-4043
NCDOT Roadside Environmental Unit	1557 Mail Service Center (MAIL) Raleigh NC 27699-1557	(919) 733-2920	(919) 733-9810

United States Army Corps of Engineers (Civil)



Regulatory Field Office	MAILING ADDRESS	PHONE	FAX
ASHEVILLE REGULATORY FIELD OFFICE (NCDOT Divisions 10, 12, 13 & 14)	151 Patton Avenue, Room 208 Asheville, North Carolina 28801-5006	(828) 271-7980	(828) 281-8120
RALEIGH REGULATORY FIELD OFFICE (NCDOT Divisions 5, 7, 9 & 11)	6508 Falls of the Neuse Road, Suite 120 Raleigh, North Carolina 27615	(919) 876-8441	(919) 876-5823
WASHINGTON REGULATORY FIELD OFFICE (NCDOT Divisions 1, 2 &4)	Post Office Box 1000 Washington, North Carolina 27889-1000	(252) 975-1616	(252) 975-1399
WILMINGTON REGULATORY FIELD OFFICE (NCDOT Divisions 3, 6 & 8)	Post Office Box 1890 Wilmington, North Carolina 28402-1890	(910) 251-4511	(910) 251-4025

United States Fish & Wildlife Services*

RALEIGH FIELD OFFICE FOR ECOLOGICAL SERVICES	SS1-F Pylon Drive Raleigh, NC 27636-3726	(919) 856-4520	(919) 856-4556
ASHEVILLE FIELD OFFICE FOR ECOLOGICAL SERVICES	160 Zillicoa Street Asheville, NC 28801	(828) 258-3939	(828) 258-5330

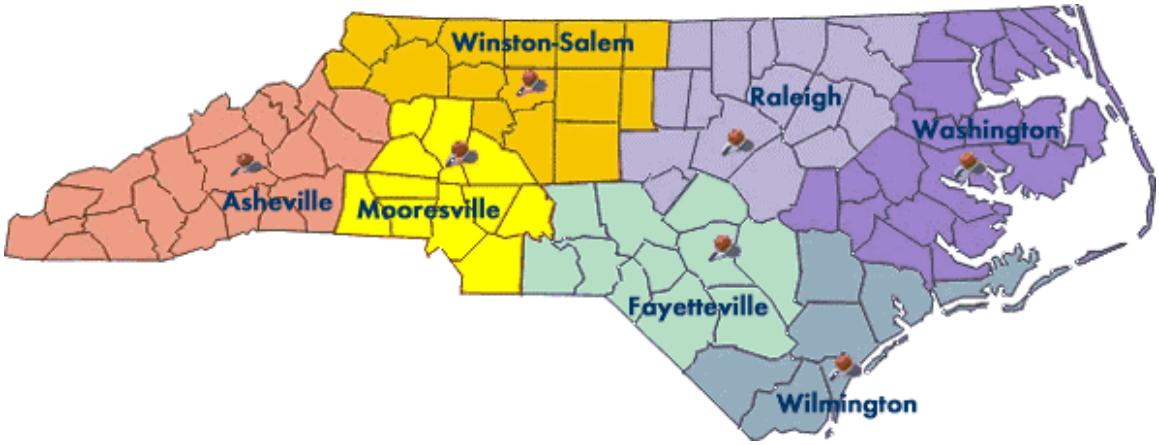
* County list of threatened and endangered species can be found at the website http://nc-es.fws.gov

National Marine Fisheries Service

HABITAT CONSERVATION DIVISION	Pivers Island Beaufort, NC 28516	(252) 728-5090	(252) 728-8728

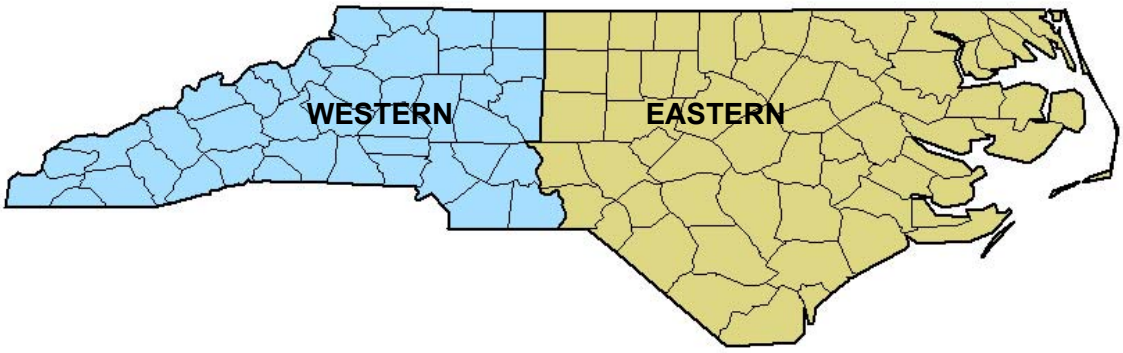
NCDENR Regional Contacts

DWQ, DLR-LQS



Region Offices	Address	Phone	Fax
Asheville Regional Office	Interchange Building 59 Woodfin Place Asheville, NC 28801-2482 (Courier 12-59-01)	(828) 251-6208	(828) 251-6452
Fayetteville Regional Office	Systel Building, 225 Green St., Suite 714 Fayetteville, NC 28301-5094 (Courier 14-56-25)	(910) 486-1541	(910) 486-0707
Mooresville Regional Office	919 North Main Street Mooresville, NC 28115 (Courier 09-08-06)	(704) 663-1699	(704) 663-6040
Raleigh Regional Office	1628 Mail Service Center Raleigh, NC 27699-1628 Location: 3800 Barrett Drive Raleigh, NC 27611 (Courier 52-01-00)	(919) 571-4700	(919) 571-4718
Washington Regional Office	943 Washington Square Mall Washington, NC 27889 (Courier 16-04-01)	(252) 946-6481	(252) 975-3716
Wilmington Regional Office	127 Cardinal Drive Extension Wilmington, NC 28405 (Courier 04-16-33)	(910) 395-3900	(910) 350-2004
Winston-Salem Regional Office	585 Waughtown Street Winston-Salem, NC 27107 (Courier 13-15-01)	(336) 771-4600	Main (336) 771-4631 Water Quality (336) 771-4630

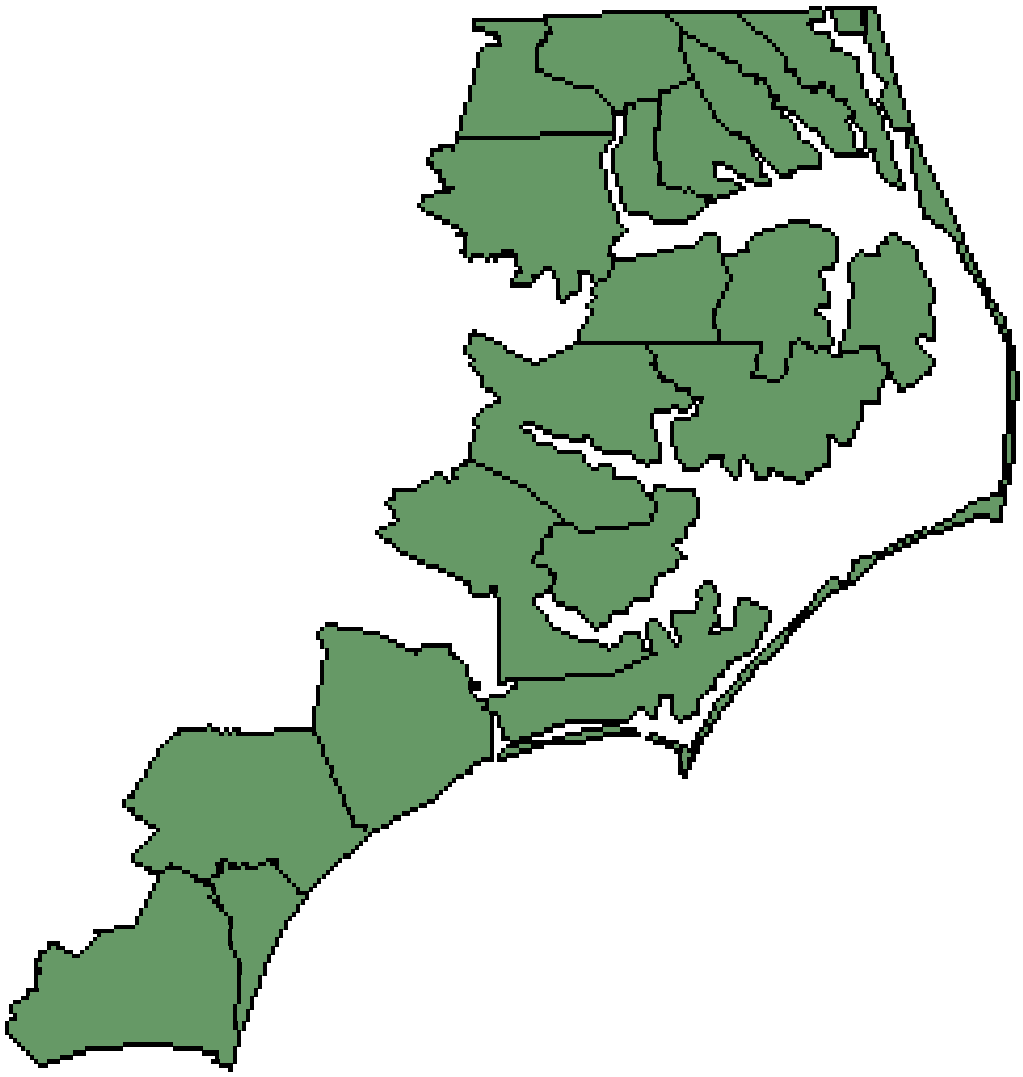
Wildlife Resources Commission Contacts



Eastern Counties Highway Project Coordinator	1142 I-85 Service Road Creedmoor, NC 27522 (919) 528-9886
Western Counties Highway Project Coordinator	12275 Swift Road Oakboro, NC 28129 (704) 485-2384
Northern Coastal Plain Regional Non-Game Biologist Coordinator	NCWRC, DENR 943 Washingto Square Mall Washington, NC 27889 (252) 946-6061 Ext. 345
Southern Coastal Plain Regional Non-Game Biologist Coordinator	901 Laroque Avenue Kinston, NC 28501 (252) 522-9736
Eastern Piedmont Regional Non-Game Biologist Coordinator	1142 I-85 Service Road Creedmoor, NC 27522 (919) 528-9886
Western Piedmont Regional Non-Game Biologist Coordinator	3855 Idlewild Road Kernersville, NC 27284 (336) 769-9453
Mountain Regional Non-Game Biologist Coordinator	20830 Great Smoky Mountain Expressway Waynesville, NC 28786 (828) 452-2546

CAMA COUNTIES

Beaufort
Bertie
Brunswick
Camden
Carteret
Chowan
Craven
Currituck
Dare
Gates
Hertford
Hyde
New Hanover
Onslow
Pamlico
Pasquotank
Pender
Perquimans
Tyrrell
Washington

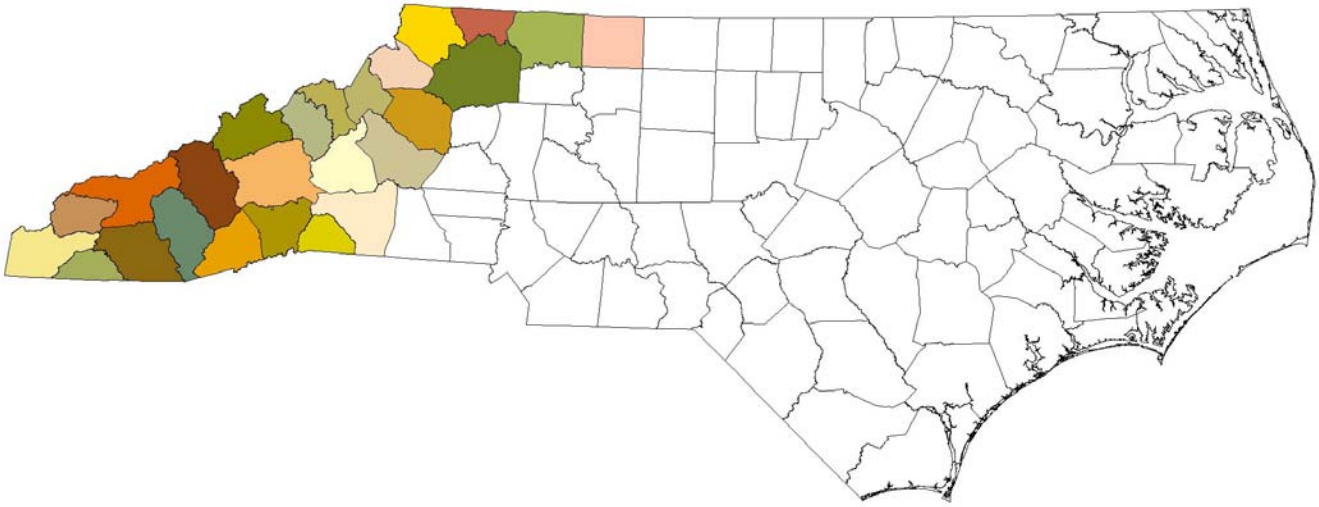


CAMA CONTACTS

OFFICE	ADDRESS	PHONE	FAX
Raleigh Central Office	1638 Mail Service Center Raleigh, NC 27699-1638	(919) 733-2293	(919) 733-1495
Elizabeth City District Serves: Camden, Chowan, Currituck, Dare, Gates, Pasquotank and Perquimans counties	1367 U.S. 17 South Elizabeth City, NC 27909	(252) 264-3901	(252) 264-3723
Morehead City District Serves: Carteret, Craven, Pamlico counties and Onslow County south to New River	151-B Hwy. 24 Hestron Plaza II Morehead City, NC 28557	(252) 808-2808	(252) 247-3330
Washington District Serves: Beaufort, Bertie, Hertford, Hyde, Tyrrell and Washington counties	943 Washington Square Mall Washington, NC 27889	(252) 946-6481	(252) 948-0478
Wilmington District Serves: Brunswick, New Hanover, Pender counties, and Onslow County north to New River	127 Cardinal Drive Ext. Wilmington, NC 28405-3845	(910) 395-3900	(910) 350-2004

NORTH CAROLINA TROUT WATERS

(Named West to East)



Cherokee	Yancey	Wilkes
Graham	Mitchell	Surry
Clay	McDowell	Stokes
Macon	Rutherford	
Swain	Polk	
Jackson	Burke	
Haywood	Caldwell	
Transylvania	Avery	
Henderson	Watauga	
Buncombe	Ashe	
Madison	Allegany	

Regulations

Clean Water Act

In 1972, Congress enacted the first comprehensive national clean water legislation in response to growing public concern for serious and widespread water pollution. The Clean Water Act is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers and coastal areas. The Clean Water Act's primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental national goals:

- To eliminate the discharge of pollutants into the nation's waters, and
- To achieve water quality levels that are fishable and swimmable.

Section 404

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into ***waters of the United States, including wetlands (waters of the U.S. are referred to as jurisdictional waters in this manual)***. Activities in jurisdictional waters that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for agriculture and forestry.

The basic premise of the program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the jurisdictional waters would be significantly degraded. In other words, when you apply for a permit, you must show that you have

Taken steps to avoid wetland impacts where practicable,
Minimized potential impacts to wetlands, and
Provided compensation for any remaining, unavoidable impacts through activities to restore or create wetlands.

A permit review process controls regulated activities. An individual permit is usually required for potentially significant impacts. However, for most discharges that will have only minimal adverse effects, The United States Army Corps of Engineers (USACE) has established nationwide general permits and some specific regional general permits, which allow an activity under specific conditions.

If the USACE determines that a 404 Permit is required because the proposed project involves impacts to jurisdictional waters, then a 401 Water Quality Certification is also required. In North Carolina, a single form is used to request both a 404 Permit and 401 Certification.

Section 401

Section 401 of the Clean Water Act delegates authority to the states to issue a 401 Water Quality Certification for all projects that require a Federal Permit (such as a Section 404 Permit). The "401" is essentially a verification by the state Division of Water Quality (DWQ) that a given project will not degrade jurisdictional waters or otherwise violate water quality standards.

Endangered Species Act (ESA) Section 7 Interagency Cooperation

Applicability: Applies to all NCDOT projects that have a federal involvement including FHWA funded projects, or projects requiring a federal permit such as an Army Corps of Engineers permit.

Requirements: Section 7 of the ESA requires every Federal agency to insure any action it authorizes, funds, or carries out "is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of designated critical habitat."

Procedures: The procedural regulations governing interagency cooperation (consultation process) under Section 7 of the ESA were established by a joint rule (50 CFR Part 402) between the U.S. Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NMFS) on June 3, 1986.

Protocol for Division Projects Performed by NCDOT Division Environmental Officer

- Determine presence/absence of listed species in a project area
    - Review NC Natural Heritage Program database of rare species to determine presence. If not present in database, conduct specific on-site habitat evaluation to confirm absence.
    - Habitat evaluation: consult with USFWS or NCWRC representative for latest information
    - Conduct specific surveys for plants during identified flowering periods. All surveys (plant and animals) should be conducted by the appropriate personnel.

- Evaluate and Document Project Impacts
  - Avoidance/Minimization/Offset Impacts
  - Direct Impacts
  - Secondary Impacts
  - Cumulative Impacts

- Determination of Affect
  - No Effect – no written concurrence needed (no suitable habitat, no individuals observed)
  - Not Likely to Adversely Affect – written concurrence from the Service required (suitable habitat in the impact area but no individuals observed or species may be present but project as proposed is not expected to result in adverse impact to species or critical habitat)
  - May Affect – may require formal consultation if effects cannot be avoided or minimized (individuals or critical habitat affected).

- Maintain Documentation
  - Maintain adequate documentation in terms of GIS screening, maps, correspondence, and photographs in a permanent record.
  - Provide documentation in the event of individual request or audit of programmatic projects.
  - Document negative findings as well as positive findings. Explain how conclusions were reached for either scenario.

Emergency Protocols: Requirements of the Endangered Species Act are still applicable. Appropriate NCDOT representative should immediately contact local USFWS representative to initiate appropriate coordination/consultation.

Coastal Area Management Act

In 1972, Congress passed the Coastal Zone Management Act, which encouraged states to keep our coasts healthy by establishing programs to manage, protect and promote our country's fragile coastal resources. Two years later, the North Carolina General Assembly passed the landmark Coastal Area Management Act, known as CAMA. As a part of this program, the Coastal Resources Commission (CRC) designated "Areas of Environmental Concern" (AECs) within the 20 coastal counties and set rules for managing development activities within these areas. Section 103(5)(b) of CAMA exempts road maintenance within a public right-of-way.

Sedimentation Pollution Control Act	North Carolina General Statute 113A, Article 4 was promulgated in 1973 to establish minimum mandatory controls for sedimentation from land disturbing activities. The Division of Land Resources (DLR) implements the Erosion and Sediment Control (E/SC) Program which requires approval of erosion and sediment control plans for all development activities disturbing one acre or more. DLR has delegated NCDOT authority for the NCDOT E/SC Program. The State E/SC program may also be delegated to local governments.
State Stormwater Management Program	The State Stormwater Management Program (SSMP) was established in the late 1980's and is implemented through the North Carolina Division or Environment and Natural Resources, Division of Water Quality Regional Offices. A permit is required for development activities that require either an Erosion and Sediment Control Plan (for disturbances of one or more acres) or a CAMA major permit within one or both of the following areas: The twenty North Carolina coastal counties, and/or development activities draining to Outstanding Resource Waters (ORW), High Quality Waters (HQW), Trout Waters, or Water Supply Watersheds. The SSMP requires protection of these sensitive waters through the use of BMPs designed to minimize the impacts of development activities on water quality (e.g., wet detention ponds, low-density development, etc.).
Basinwide Stream Buffers	Since the late 1990's, the DWQ has established several major river basinwide programs that require protected buffers along jurisdictional waters of the State (as shown on soil surveys, USGS topo maps or by field determination) such as streams, lakes, ponds and estuaries. Typically, a 50-foot wide vegetative band along each side of the water body is protected from development activities. The buffer is usually measured from the top of the bank or the Mean High Water line. Existing drainage ditches and roadside ditches are typically exempt from the buffer rules provided that they are managed to minimize the amount of sediment, nutrients and other pollution that enters jurisdictional waters. New ditches are allowable if stormwater management is provided. Excavation of streambeds usually require authorization from the appropriate state agency. Prior to 2002, buffer protection rules were established in the Neuse River Basin, the Tar-Pamlico River Basin, the Catawba River Basin, and the Randleman Reservoir Watershed. Additional State basinwide buffer programs may be developed in the future or

	may already be in place.
CAMA Buffers	Coastal shoreline rules require a 30-foot buffer for new development along coastal shorelines in the 20 counties governed by the Coastal Area Management Act. The buffer is measured landward from the normal high water or normal water level. The rules apply to all navigable waterways in the coastal counties, including upstream public trust shorelines. In some cases, large drainage ditches could be determined to be navigable. The buffer requirement does not apply to the oceanfront, which already has its own setback requirements.
Local Buffers	Local stream buffer programs may be established by cities, towns, counties or other public entities. These requirements may be more stringent than state buffer requirements.

Environmental Permits and Certifications

401 General Certifications	The Division of Water Quality (DWQ) issues general certifications that correspond to the Nationwide 404 permits listed below. All conditions of the Nationwide 404 permits and General Certification must be followed throughout construction and maintenance of projects authorized under the General Certification. The activities and measures described in this manual are consistent with the conditions in the Nationwide 404 permits and the State's General Certification conditions. It is the Contractor's or Construction Supervisor's responsibility to know of any special conditions identified for a specific project.
404 General Permit No. 31: NCDOT Bridges	This general permit is issued by the Wilmington District United States Army Corps of Engineers (USACE) specifically for the North Carolina Department of Transportation or other institutions charged with the construction and maintenance of public transportation infrastructure projects. This permit authorizes repair and replacement of bridges and culverts following natural disaster events. This general permit identifies general and specific conditions that must be followed in order for the permit to be applicable. Requires corresponding DWQ General Certification 3404.
404 Nationwide Permit No. 3: Maintenance	This permit authorizes the minimal impact repair, replacement, or rehabilitation of any previously authorized structure or fill that does not qualify for the Section 404(f) exemption for maintenance. Requires corresponding DWQ General Certification 3376.
404 Nationwide Permit No. 12: Utility Line Discharges	This permit authorizes the construction, maintenance and repair of utility lines and associated facilities. Requires corresponding DWQ General Certification 3374.
404 Nationwide Permit No. 13: Bank Stabilization	This permit authorizes bank stabilization activities necessary for erosion prevention. This permit may not be used for the channelization of jurisdictional waters. Requires corresponding DWQ General Certification 3399.

404 Nationwide Permit No. 14: Road Crossings	This permit authorizes activities for the construction, expansion, modification or improvement of linear transportation crossings (e.g. highways, railways, trails, etc.) in jurisdictional waters, and is subject to specific acreage and linear limits. Authorization for public linear transportation projects in non-tidal waters, excluding non-tidal wetlands adjacent to tidal waters, is provided if the discharge does not cause the loss of greater than 1/2 acre of jurisdictional waters. Authorization for public linear transportation projects in tidal waters or non-tidal wetlands adjacent to tidal waters is provided if the discharge does not cause the loss of greater than 1/3 acre of jurisdictional waters and the length of fill for the crossing does not exceed 200 linear feet. Requires corresponding DWQ General Certification 3404.
404 Nationwide Permit No. 18: Minor Discharges	This permit authorizes discharges of dredged or fill material into all jurisdictional waters, provided that the activity meets specific criteria including (a) the discharge and the volume of the excavated area does not exceed 25 cubic yards below the high water line, (b) the discharge, including excavated areas, will not cause the loss of more than 1/10 acre of a special aquatic site, including wetlands and (c) the discharge is part of a single and complete project and is not placed for the purpose of stream diversion. Requires corresponding DWQ General Certification 3402.
404 Nationwide Permit No. 23: Approved Categorical Exclusions	This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by a federal agency or department where that agency or department has determined that the activity, work or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment. Requires corresponding DWQ General Certification 3403.
404 Nationwide Permit No. 27: Wetland and Riparian Restoration and Creation	This permit authorizes activities in jurisdictional waters associated with the restoration of former waters, the enhancement or creation of degraded tidal and non-tidal wetlands and riparian areas, and the restoration and enhancement of non-tidal streams and non-tidal open water areas. This permit does not authorize stream channelization or conversion of natural wetlands to another use. Activities authorized by this permit include, but are not limited to, the removal of accumulated sediments; the installation, removal and maintenance of small water control structures,

	dikes and berms; the installation of current deflectors, the enhancement, creation or restoration of pool and riffle stream structure; the backfilling of artificial channels and drainage ditches; activities needed to reestablish vegetation; and other related activities. Requires corresponding DWQ General Certification 3399.
404 Nationwide Permit No. 33: Temporary Construction, Access and Dewatering	This permit authorizes temporary structures, work and discharges necessary for construction activities, access fills, or dewatering of construction sites. Requires corresponding DWQ General Certification 3366.
CAMA General Permit (07H.2300)	This permit authorizes demolition, removal, and replacement of existing bridges and culverts spanning no more than 250 feet of estuarine water, public trust area, and coastal wetland AECs and has threshold limits for AEC and wetland impacts. This permit does not authorize temporary fill causeways or temporary bridges associated with bridge replacements.
CAMA Dredge and Fill Permits	Under General Statute 113-229, a dredge and fill permit must be obtained before any excavation or filling project is begun in any estuarine waters, tidelands, marshlands, or State-owned lakes. Emergency permits may be issued when life or structural property is in imminent danger as a result of rapid recent erosion or sudden failure of a man-made structure.
Isolated Wetlands Permit	Isolated wetlands, which are not claimed by the USACE, are under the jurisdiction of the DWQ. The DWQ issues an Isolated Wetlands Permit following public review of the proposed work.
State Stormwater Management Permit	The DWQ issues this permit for development activities in the 20 coastal CAMA counties. The permit specifies stormwater runoff controls for projects that require a CAMA Major Permit or an approved Erosion and Sediment Control Plan.

Predictable Permit Conditions

Environmental permits typically include special conditions to ensure that impacts to the aquatic environment are minimal. Some of the more common conditions are included in this appendix. However, this list is not inclusive. The permittee must read, understand, and comply with all of the permit conditions that are associated with each maintenance and construction activity.

Proper Maintenance	Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
Soil and Erosion Controls	Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow. All sediment and erosion control measures placed in wetlands and waters shall be removed and the original grade restored within two months after the project is permanently stabilized.
Aquatic Life Movements	No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.
Equipment	Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
Endangered Species	No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species.
Historic Properties	No activity that may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties

	listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized.
Anadromous Fish Spawning Areas	Discharges into Waters of the United States designated by either the N. C. Division of Marine Fisheries (NCDMF) or the N. C. Wildlife Resources Commission (NCWRC) as anadromous fish spawning area, are prohibited during the period between February 15 and June 30, without prior written approval form NCDMF or NCWRC and the Corps.
Sturgeon Spawning	Discharges into Waters of the United States designated as sturgeon spawning areas are prohibited during the period between Feb. 1 and June 30, without approval from the National Marine Fisheries Service (NMFS).
High Quality Waters	Outstanding Resource Waters, High Quality Waters, Inland Primary Nursery Areas, Contiguous Wetlands, and Primary Nursery Areas.
Areas of Environmental Concern	Area of Environmental Concern (AEC) in the twenty (20) coastal counties of Eastern North Carolina covered by the N.C. Carolina Coastal Area Management Act (CAMA), must also obtain the required CAMA permit.
Trout Waters	Prior to the use of any NWP in Mountain Trout Waters within twenty-five (25) designated counties of North Carolina, applicants must comply with NWP 13. The applicant shall furnish a written statement of compliance with all of the conditions listed in the applicable NWP. Notification will include a letter of comments and recommendations from the North Carolina Wildlife Resources Commission (NCWRC), the location of work, a delineation of wetlands, a discussion of alternatives to working in the Mountain Trout Waters, why other alternatives were not selected, and a plan to provide compensatory mitigation for all unavoidable adverse impacts to the Mountain Trout Waters.
Riparian Buffer Protection Rules	Impacts to any stream length in the Neuse, Tar-Pamilico, Randleman and Catawba River Basins (or any other river basins with Riparian Area Protection Rules [Buffer Rules]), requires written concurrence from DWQ in accordance with 15A NCAC 2B.0200. Activities listed as “exempt” from these rules do not need to apply for written concurrence.

Concrete in Water	Measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with waters of the state until the concrete has hardened.
Riprap Bank Stabilization	Filter cloth must be placed underneath riprap used for streambank stabilization.
Pipe/Culvert Installation	Installation shall be in a manner to promote the safe passage of fish and other aquatic organisms. All culverts in the 20 CAMA coastal counties must be buried to a depth of one foot below the bed of the stream or wetland. The dimension, pattern, and profile of the stream, (above and below a pipe or culvert), should not be modified by widening the stream channel or by reducing the depth of the stream. Culvert inverts will be buried at least one foot below the bed of the stream for culverts 48 inches in diameter. For culverts 48 inches in diameter or smaller, culverts must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert.
Steam Relocations	Natural channel design must be applied to the maximum extent practicable for stream relocations.

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Additional copies of this manual or further questions should be addressed to:

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